Claims 1-21 (cancelled)

Claim 22 (currently amended): A device for shaping objects by removal of material from the surface thereof comprising:

a pulsed laser beam;

a deflecting device through which the laser beam is guided over the surface of the object; and

an optical device provided for changing the distribution of the radiation intensity inside the laser beam cross section having at least one optical element with a microoptically active structure~~;~~

~~said microptically active structure having a diffractively active element structured in the micrometer range whose dimensions approximately correspond to the wavelength of the pulsed laser beam, wherein the microoptically active structure influences~~ that alters the intensity distribution in the laser beam cross section in such a way that the laser beam, after passing through said optical element, has a bell-shaped or Gaussian intensity distribution, or an intensity distribution similar to a bell-shaped or Gaussian distribution, in at least one cross-sectional direction.

Claim 23 (previously presented): The device according to claim 22, wherein said at least one optical element can be selectively introduced into or removed from the laser beam path for the purpose of changing the intensity distribution, wherein the at least one optical element is provided with a diffractive or refractive microoptically active structure which is suitable for influencing the intensity distribution in the laser radiation cross section.

Claim 24 (previously presented): The device according to claim 23, wherein an optical element is provided which generates a radially symmetric intensity distribution within the laser beam cross section in which an approximately equal intensity is present in a circular central cross-sectional area and an intensity falling in a bell shape or Gaussian shape is present from the central cross-sectional area to the edge regions of the laser beam.

Claim 25 (previously presented): The device according to claim 23, wherein an optical element is provided which generates a radially symmetric intensity distribution within the laser beam cross section in which an intensity maximum is present in the center of the cross section and an intensity falling in a bell-shaped or Gaussian manner is present proceeding from the center to the edge regions.

Claim 26 (previously presented): The device according to claim 23, wherein an optical element is provided for generating different intensity distributions in different cross-sectional directions through the laser beam.

Claim 27 (previously presented): The device according to claim 26, wherein the optical element is formed in such a way that, in two sections through the laser beam which are perpendicular to one another, an at least approximately Gaussian intensity distribution is achieved in one section and an at least approximately homogeneous intensity distribution is achieved in the second section, wherein the deflecting direction is oriented at right angles to the homogeneous intensity distribution.

Claim 28 (previously presented): The device according to claim 22, wherein the optical device comprises a plurality of optical elements which are arranged on a movable carrier and the optical elements can be introduced into the laser beam or removed from the laser beam by the movement of the carrier.

Claim 29 (previously presented): The device according to claim 28, wherein the movable carrier is constructed as a rotatable exchange wheel which is mounted so as to be rotatable about an axis of rotation oriented parallel to the beam direction and an which the optical elements are arranged along a partial circle.

Claim 30 (previously presented): The device according to claim 22, wherein a variable optical system is provided in the laser beam path for influencing the size of the spot area directed onto the surface of the object.

Claim 31 (previously presented): The device according to claim 30, wherein the size of the spot area is adapted to the deflection angle of the laser beam between two consecutive pulses and to the pulse frequency of the laser beam in such a way that the individual spot areas overlap by about 30% on the surface of the object.

Claim 32 (previously presented): The device according to claim 31, wherein the variable system or the exchange wheel are provided with electronically controllable actuating drives whose control inputs, along with a control input of the deflecting device, are connected with outputs of a control unit, wherein preset data for the size of the spot area or for the rotating movement of the exchange wheel or for the deflecting angle are applied to the outputs of the control unit.

Claim 33 (previously presented): The device according to claim 32, wherein a device is provided for detecting actual values of curvature of individual surface portions or of the entire surface to be treated, this device being coupled with an actual-value storage.

Claim 34 (previously presented): The device according to claim 32, wherein the control unit is connected on the input side with the actual-value storage and a reference value storage, and a computation circuit is provided in the control unit for determining preset data for the size of the spot area or for the rotating movement of the exchange wheel or for the deflecting angle of the laser beam from comparison of the actual values with the reference values.

Claim 35 (currently amended): A process for shaping objects through material removal from the surface of the object comprising the steps of:

guiding a pulsed laser beam ~~which is guided~~ <u>so as to move the laser beam</u> over the object surface; and

~~providing that~~ <u>changing a characteristic of the laser beam entering the object during the shaping using an optical element having microoptically active structure, wherein the characteristic includes at least one of</u> the distribution of the radiation intensity within the laser beam<u>,</u> ~~or~~ the size of the spot area with which the laser beam strikes the object surface<u>,</u> ~~or~~ <u>and</u> the deflecting angle for the laser beam ~~are changed during the shaping by a microoptically active structure said microptically active structure having a diffractively active element structured in the~~

~~micrometer range whose dimensions approximately correspond to the wavelength of the pulsed laser beam~~.

Claim 36 (previously presented): The process according to claim 35, wherein the material removal is carried out with a small spot area at the start of the shaping and the material removal is carried out with an increasingly large spot area at the end of the shaping.

Claim 37 (previously presented): The process according to claim 35, wherein, in the final phase of shaping, the material removal is carried out with a spot area whose size corresponds to the total size of the object surface to be treated.

Claim 38 (previously presented): The process according to claim 35; wherein the material removal is carried out with a pot-shaped intensity distribution at the start of shaping and material removal is carried out with an increasingly Gaussian intensity distribution at the end of shaping.

Claims 39-42 (cancelled)

Claim 43 (currently amended): A method for providing laser radiation for treatment or removal of material from a surface:

sending a pulsed laser to a ~~diffractive~~ microoptically active element;

shaping a radiation intensity of the pulsed laser in the microoptically active element so that an optimum and homogeneous beam shape is achieved irrespective of an original beam shape emanating from the laser by generating in the microoptically active element a radially symmetric intensity distribution within the laser beam cross section in which an intensity maximum is present in the center of the cross section and the intensity distribution falls in a bell-shaped Gaussian manner proceeding from the center of the edge regions; and

applying the laser with a radially symmetric intensity distribution in a mutually overlapping spot pattern so that a smooth non-step like resultant application to the surface is provided to avoid creation of central islands in the surface.

Claim 44 (previously presented): The method of claim 43 wherein the microoptically active element includes a structure applied to the microoptically active element to provide at least one of the following characteristics taken from the group comprising a microoptically active vertical profile characteristic, a variation in the Index of refraction extending over its cross-sectional area characteristic, and a variation in absorption characteristic.

Claim 45 (previously presented): The method of claim 43 wherein the step of applying the laser with a radially symmetric intensity distribution in a mutually overlapping spot pattern so that a smooth non-step like resultant application to the surface is provided to avoid creation of central islands in the surface further comprises:

performing a first spot scanning wherein first spots are sized to extend over a smaller area than the entire surface to be treated; and

performing a second spot scanning wherein second spots are sized is in the range of the size of the surface to be treated and whose centers are directed to the Center of the surface to be treated;

so that the resultant effect from the first and second spot scanning steps is a smooth non-step like resultant laser radiation application to the surface to avoid creation of central islands in the surface.

Claim 46 (new): The device according to claim 22, wherein the microoptically active structure is a refractive structure.

Claim 47 (new): The device according to claim 22, wherein the microoptically active structure is a diffractive structure.

Claim 48 (new): The device according to claim 22, wherein the microoptically active structure is a holographic structure.

Claim 49 (new): The device according to claim 22, wherein the object includes an eye.

Claim 50 (new): The method according to claim 43, wherein the object includes an eye.

Claim 51 (new): The device according to claim 22, wherein the pulsed laser beam is an excimer laser beam.